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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,609	09/19/2003	Hegeon Kwun	P-17.116(CIP)	6403

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EXAMINER	
WHITTINGTON, KENNETH	

ART UNIT	PAPER NUMBER
2862	

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/665,609	KWUN ET AL.	
	Examiner	Art Unit	
	Kenneth J Whittington	2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 19 September 2003 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The listing and/or citation of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

The drawings are objected to because in FIGS. 1 and 16, there are misspelled words, i.e., "SYNCHRONIZATRON" in FIG. 1 and "INATIAL" and "DIRECYLY" in FIG. 16.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the iron-cobalt strip being in two strips and being pressed against the outer circumference as recited in claims 11 and 22 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because on line 2, it contains words that can be implied, i.e., "is shown" and on line 9, it contains legalese, i.e., "said". Correction is required. See MPEP § 608.01(b).

The use of the trademarks PERMENDUR 49, HIPERCO-50, HYPERCO-50HS and TERFENOL-D has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks. It would also be advisable to recite the underlying

products, material components and portions thereof as the underlying products sold under particular trademarks may change over time.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-22 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of U.S. Patent No. 6,429,650 and/or U.S. Patent No. 6,396,262 in view of Kuhr (US 5,596,150) and ordinary skill in the art.

The '650 patent, particularly claims 1-18, and the '262 patent, particularly claims 12 and 13, teach each and every limitation claims 1-22 of the present application except for the

ferromagnetic strip being made from an iron-cobalt alloy and the particular percentages of iron and cobalt in such alloy. The ferromagnetic strip according to the '650 and '262 patent is made from nickel, silicon steel, or a magneto-restrictive material (See '650 patent, col. 13, lines 47-49). Kuhr teaches of a sensor for measuring physical conditions of a material that affect the material's magnetic response (See Kuhr col. 2, lines 45-51) and further teaches of placing ferromagnetic strips comprised of an alloy of iron-cobalt on the material to be tested (See col. 3, lines 25-39). It would have been obvious to use the alloy as taught by Kuhr in the method and apparatus as taught in the '650 patent. One having ordinary skill in the art would have been motivated to do so because as recognized by Kuhr, nickel, cobalt, iron, other rare earth elements and alloys of these are alternative choices of ferromagnetic materials (See Kuhr col. 3, lines 25-29).

Furthermore, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *See In re Aller*, 105 USPQ 233, 235 (CCPA 1955). Since the use of the iron-cobalt alloy is known in the art, the determination of the optimum composition percentages at at least 40% iron and at

least 40% cobalt would be routine experimentation. *See also In re Boesch*, 205 USPQ 215 (CCPA 1980).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6, 13 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuhr. Regarding claims 1 and 6 (method and apparatus claims), Kuhr discloses a method and apparatus for non-contact measurement of physical conditions of a material that affect the materials magnetic response (See Kuhr col. 1, lines 7-12): comprising:

inducing residual magnetization in at least one thin ferromagnetic strip (See col. 3, lines 40-65);

circumferentially pressing said thin ferromagnetic strip against said pipe or tube (See FIG. 2 and col. 3, lines 29-39);

first locating a transmitter coil adjacent said thin ferromagnetic strip (See FIG. 2, item 24) and generating a pulse signal in a transmitter control circuit and delivering it to

said transmitter coil, said transmitter coil creating magnetostrictively a guided wave in said thin ferromagnetic strip, said thin ferromagnetic strip being coupled to said pipe or tube so that said guided wave propagates along the length of said pipe or tube; generating and delivering a pulse signal (See col. 3, line 16 to col. 5, line 45);

second locating a receiver coil adjacent said thin ferromagnetic strip (See FIG. 2, item 20) and magnetostrictively detecting by said receiver coil said guided wave and any reflected signals in said pipe or tube through said coupled thin ferromagnetic strip, said reflected signals including any caused by said anomalies in said pipe or tube; and determining if said reflected signals were due to said anomalies (See col. 3, line 16 to col. 5, line 45) and

said thin ferromagnetic strip being made from an iron-cobalt alloy (See col. 3, lines 25-29).

Regarding claims 13 and 17 (method and apparatus claims), Kuhr discloses a method and apparatus for non-contact measurement of physical conditions of a material that affect the materials magnetic response (See Kuhr col. 1, lines 7-12): comprising:

inducing residual magnetization in at least one thin iron-cobalt alloy strip (See col. 3, lines 25-65); and

circumferentially pressing said thin iron-cobalt alloy strip against said pipe or tube (See FIG. 2 and col. 3, lines 29-39);

first locating a transmitter coil adjacent said thin iron-cobalt alloy strip and generating a pulse signal in a transmitter control circuit and delivering said pulse signal to said transmitter coil, said transmitter coil creating magnetostrictively a guided wave in said thin iron-cobalt alloy strip, said thin iron-cobalt alloy strip being coupled to said pipe or tube so that said guided wave propagates along the length of said pipe or tube (See FIG. 2, item 24 and col. 3, line 16 to col. 5, line 45);

second locating a receiver coil adjacent said thin iron-cobalt alloy strip and magnetostrictively detecting by said receiver coil said guided wave and any reflected signals in said pipe or tube through said coupled thin iron-cobalt alloy strip, said reflected signals including any caused by said anomalies in said pipe or tube and said signal amplitude of said reflected signals being at least four times greater than with coupled nickel strips; and determining if said reflected signals were due to said anomalies (See FIG. 2, item 20 and col. 3, line 16 to col. 5, line 45).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 6, 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over admission in view of Kuhr. It is noted that both claims 1 and 6 are written in the Jepson claim format. Thus, all limitations outlined prior to the improvement are considered prior art. Furthermore, such limitations are also admitted in the specification from page 5, line 21 to page 6, line 15, page 10, lines 10-15 and page 19, lines 7-14.

Accordingly, all the features of claims 1, 6, 13 and 17 are taught by the admitted prior art except the ferromagnetic strip being an iron-cobalt alloy. Kuhr teaches of a sensor for measuring physical conditions of a material that affect the material's magnetic response (See Kuhr col. 2, lines 45-51) and further teaches of placing ferromagnetic strips comprised of an alloy of iron-cobalt (See col. 3, lines 25-39) on the material to be tested. It would have been obvious to use the alloy as taught by Kuhr in the method and apparatus as taught in the admitted prior art. One having ordinary skill in the art would have been motivated to do so because as recognized by Kuhr, nickel, cobalt, iron, other rare earth elements and alloys of these are alternative choices of ferromagnetic materials (See Kuhr col. 3, lines 25-29).

Claims 2, 3, 7, 8, 14, 15, 18, 19, are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior in view of Kuhr as applied to claims 1, 6, 13 and 17 above, and further in view of Kwun et al. (US 5,581,037), hereinafter referred to as '037.

Regarding claims 2, 3, 7, 8, 14, 15, 18 and 19, Kuhr discloses the residual magnetization in the iron-cobalt strip being induced in either the lengthwise or widthwise direction

and the generated wave being a longitudinal wave (See Kuhr col. 3, lines 40-65). However, the combination of the admitted prior art in view of Kuhr does not explicitly teach the waves being either torsional or longitudinal. '037 teaches of placing the coils along the outside of the tube or pipe, surrounding the pipe or inserted therein which makes the apparatus able to use torsional and longitudinal waves in the non-destructive testing of pipes and tubes using magneto-restrictive sensors (See '037 FIGS. 2a-2c and col. 6, lines 57-60). It would have been obvious to use the differing waves as taught by '037 in the combination of the admitted prior art in view of Kuhr. One having ordinary skill in the art would have been motivated to do so to use the best waves for finding the particular defect, such as using longitudinal waves for circumferential cracks and torsional waves for longitudinal cracks (See '037 col. 6, line 57 to col. 7, line 5).

Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior in view of Kuhr as applied to claims 1 and 6 above, and further in view of ordinary skill in the art. As discussed above, the admitted prior art in view of Kuhr teaches each and every limitation of claims 1 and 6. However, this combination does not explicitly teach the

particular percentages of the iron and cobalt in the alloy. But where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *See In re Aller*, 105 USPQ 233, 235 (CCPA 1955). Since the use of the iron-cobalt alloy is known in the art, the determination of the optimum composition percentages of at least 40% iron and at least 40% cobalt would be routine experimentation. *See also In re Boesch*, 205 USPQ 215 (CCPA 1980).

Allowable Subject Matter

Claims 4, 9-11, 16 and 20-22 are objected to as being dependent upon a rejected base claim and are subject to the double patent rejection, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and a terminal disclaimer was filed to overcome the double patenting rejection.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 4, 9, 16 and 20, while the prior art teaches magnetic strips adjacent each of the transmission/receiving coils in a torque-type sensor, the prior art does not teach the transmission coil being separate from the

receiving coil such that there is a separate magnetic strip under each.

Regarding claims 10, 11, 21 and 22, based on their dependency on claims 9 and 20 they have allowable subject matter for the same reasons as noted above with respect to claims 9 and 20.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kelsall et al. (US2,190,667) discloses the advantages of an iron-cobalt alloy. Olsen et al. (US 4,931,730) teaches a non-destructive apparatus for testing materials using multiple coils with a ferromagnetic material being placed onto the material to be tested. Gammell (US 5,532,589) teaches a subsurface examination technique. Barkhoudarian (US 4,523,482 and US 4,416,161), Kita (US 4,572,005) and Sakaki et al. (US 5,297,044) each teach of various method for detecting magnetic response anomalies in tubular materials. Kwun et al. (US 6,624,628) and Kwun (US 6,294,912) are patents related to the present application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J Whittington whose telephone number is (571) 272-2264. The

examiner can normally be reached on Monday-Friday, 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (571) 272-2233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kenneth J Whittington
Examiner
Art Unit 2862

JAY PATIDAR
PRIMARY EXAMINER

kjw